
Sudan University of Science & Technology

Colleges of Graduate Studies and Scientific Research

CHARACTERIZATION OF DISTILLATION
RESIDUE OF SUDANESE CRUDE OILS

توصيف لمخلفات الخامات البترولية السودانية

**A thesis Submitted for the fulfillment of the degree of
M.Sc. Of Science in chemistry**

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بسم الله الرحمن الرحيم

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صدق الله العظيم

سورة البقرة- الاية (163)

DEDECATION

I would like to dedicate this work to Parents and wife and
children

ACKNOLDGMENT

I wish express my thanks to my supervisor Dr.Abdalsalam
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I can't find words to express my gratitude to...my director
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facilities

:Abstract

This study evaluates the atmospheric distillation of the different Sudanese crude oils (Nile blend, Hejlig Crude, Tharjath crude, Fulla blend) and discussed the process of distillation under atmospheric pressure and the .best ways to deal with the residue

In this study we evaluate the different Sudanese crude oils by using true boiling point (TBP) instrument and vacuum distillation by (i-ficher Dist D1160) and others physical and chemical properties (sulfur content, API, .(S.G, TAN

The metals were checked by induced couple plasma (ICP) beside the .carbon number distribution test by GC in this study we note that the sample (N), which represents a mixture of Nile Blend and the sample (G) which represents the Hejlig crude, give the best results in terms of the residue from the atmospheric distillation column and this indicates the lightness relative to such crude oils which are of high value (API), And the results of the sample (P, W) which represents Fulla blend and tharjath blend give high quantity of residue from atmospheric distillation represents approximately 80-87% of the crude oil , therefore, we found the processing of atmospheric residue from sample (P,W) is expensive and not economically feasible Therefore, the results from a combination of different sampling with each other, we find that the ratio (90:10) of the sample (G) with the sample (P) give the best properties of the formed blend (API = 32.6), which when processed in the atmospheric distillation column and vacuum distillation column give products of high and reasonable results for the residual from .each of the two processes

The specification of the blend (G: P) is excellent compared to the .specifications of (P) sample

الخلاصة:

هذه الدراسة تختص بتقييم عمليات التقطير تحت الضغط الجوى لمختلف الخامات السودانية (مزيج النيل، مزيج الفولة ، خام هجليج ، خام سارجاس) ومناقشة عملية التقطير تحت الضغط الجوى ، وأفضل السبل للتعامل مع مخلفات هذه المعالجة للحصول على أفضل النتائج.

تم تقييم مختلف زيوت الخام السوداني تحت الضغط الجوى باستخدام جهاز ال(TBP) والتقطير تحت الضغط الفراغى باستخدام جهاز ال(I - Ficher -D1160) وغيرها من الخصائص الفيزيائية والكيميائية مثل (محتوى الكبريت ، TAN ، SG ، API.....الخ). وقد تم فحص محتوى المعادن بواسطة جهاز ال(ICP) بجانب اختبار توزيع الرقم الكربونى بواسطة جهاز ال GC.

في هذه الدراسة نلاحظ أن العينة (N) ، والتي تمثل مزيج النيل والعينة (G) والتي يمثل الخام Hejlig تعطى أفضل النتائج من حيث البقايا من عمود التقطير تحت الضغط الجوى ، وهذا يدل على الخفة النسبية لهذه الخامات التي هي ذات قيمة (API) عالية ، ونتائج العينتان (P ، W) الذين يمثل خليط الفولة ومزيج tharjath يعطيان كمية كبيرة من مخلفات التقطير تحت الضغط الجوى و يمثل حوالي 80-87 ٪ من النفط الخام ولذا وجدنا معالجة المتبقى للتقطير تحت الضغط الجوى للعينتان (P ، W) مكلفة وغير مجدية.

وعليه نلجاء الى عمليات مزج العينات مع بعضها البعض للحصول على خصائص جيدة ، فإننا نجد أن المزج بنسبة (90:10) من العينة (G) مع العينة (P) تعطى أفضل خصائص (API = 32.6) ، الذي عند معالجته في عمود التقطير الجوى والفراغى يعطي نتائج عالية ومعقولة للمتبقى من كل من العمليتين. والمزيج الناتج (G : P) ذو مواصفات ممتازة بالمقارنة مع مواصفات العينة (P) عينة .

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CHAPTER ONE

INTRODUCTION -

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